Amendments to the Specification:

IN THE ABSTRACT:

Please replace the abstract with the attached replacement abstract.

IN THE SPECIFICATION:

Please replace the paragraph beginning at page 5, lines 5-16 with the following rewritten paragraph:

The systems and methods according to this invention will also be described with respect to the term ~~"symmetry point",~~ "symmetry point", that is, a point ~~which~~ that is presumed to lie on the line of symmetry of a function, or portion of a function, that is presumed to be symmetric. As used herein, any symmetry point is presumed to have an x-coordinate value ~~which~~ that corresponds to the extremum of a correlation function region which is presumed to be symmetric. That is, the x-coordinate value of the symmetry point corresponds to the peak offset value of the correlation function. The x-coordinate value of a symmetry point is one example of a coordinate of symmetry determined by "local" analysis. However, a global coordinate of symmetry may also be determined, for example, by the previously discussed conventional methods. Determination of a global coordinate of symmetry is in some cases enhanced by various ~~of~~ embodiments of the systems and methods according to this invention.

Please replace the paragraph beginning at page 10, lines 17-27 with the following rewritten paragraph:

As shown in Fig. 1, the image receiving optical elements of the readhead 126 include a lens 140 positioned at the illuminating and receiving end of the readhead ~~assembly 106~~ 126 such that the optical axis of the lens 140 is generally aligned with the illuminated spot on the optically rough surface 104. The readhead 126 further includes a pinhole aperture plate 150, spaced apart from the lens 140 along an optical axis, and a light detector 160 spaced apart from the aperture plate 150 along the optical axis, as shown in Fig. 1. The light detector 160 can be any known or later-developed type of light sensitive material or device that can be organized into an array of independent and individual light sensing elements, such as a camera, an electronic or digital camera, a CCD array, an array of CMOS light sensitive elements, or the like.

Please replace the paragraph beginning at page 15, line 23 – page 16, line 6 with the following rewritten paragraph:

Fig. 2 is a graph illustrating the results of comparing first and second images according to the previously-described conventional multiplicative correlation function

method. In particular, the correlation function includes a plurality of discrete correlation function value points ~~201~~ 204 that are separated along the x-axis by a predetermined offset increment corresponding to the pixel pitch P, as indicated by the distance 208. The predetermined offset increment can be directly related to a displacement increment of the optically rough surface 104 shown in Fig. 1. This displacement increment depends upon the effective center-to-center spacing between the individual image elements 162 of the array 166 in the direction corresponding to the measurement axis 110, which is also referred to as the pixel pitch P, in the following description, and the amount of magnification of the displacement of the optically diffusing, or optically rough, surface 104 by the optical system of the readhead 126.

Please replace the paragraph beginning at page 17, lines 14-22 with the following rewritten paragraph:

When a multiplicative correlation function such as Eq. (2) is used, the correlation function is relatively curved in the region surrounding the peak or trough. Thus, the numerically-fit function f(x) is conventionally chosen to be a second-order or higher function. However, the inventors have found that such conventional methods for estimating the correlation function extremum introduce significant systematic errors, such as those illustrated in ~~Figs. 3-5,.~~ Figs. 3-5. It is desirable to use relatively few correlation function value points, from the standpoint of the computational speed of the methods and corresponding systems that estimate the correlation function extremum and determine the corresponding displacement.

Please replace the paragraph beginning at page 42, lines 1-13 with the following rewritten paragraph:

Next, a new line 932 is defined that extends from the point 910 and has the slope S_{34}. The line 932 is a second, or alternative, approximation of a portion of the true continuous correlation function 305. The characteristics of the line 932 provide an alternative estimate of the true correlation function in the vicinity of the y-coordinate value y_1, on the opposite side of the correlation function extremum from the correlation function value point 801. Then, as best seen in Fig. 15, a point 904 on the line ~~933~~ 932 is identified which has a y-coordinate value equal to the y-coordinate value y_1 of the correlation function value point 801, as indicated by the line 326. The x-coordinate value of the point ~~905~~ 904, x_s, is a second, or alternative, estimate of the true x-coordinate value x_t of a point 902 lying on the curve of the true continuous correlation function 305, and symmetrically located about the

extremum, or peak offset, of the true continuous correlation function 305 relative to the correlation function value point 801.

Please replace the paragraph beginning at page 51, lines 1-7 with the following rewritten paragraph:

The circuits 271-273, collectively or individually, constitute correlation function value point identification circuitry, suitably usable to select a plurality of correlation function value points usable by various embodiments of the systems and methods according to this invention. The circuits 271, 275 and 278, collectively or individually, constitute estimated coordinate identification circuitry, suitably usable to determine estimated spatial translation coordinates, and/or estimated correlation value coordinates usable by various embodiments of the systems and methods according to this invention.

Please replace the paragraph beginning at page 53, lines 3-15 with the following rewritten paragraph:

Next, depending on the particular method for estimating the peak offset or displacement that is implemented in the interpolation circuit 270 of the signal generating and processing circuit 200, the line determining circuit 274, if implemented for the particular implemented method for estimating the peak offset or displacement in the signal generating and processing circuit 200, determines one or more lines presumed to correspond to at least a portion of the correlation function, based on one or more of the selected correlation function value points that remain after the correlation value excluding circuit 273, if used, excludes any of the selected correlation function value points.

Then, if the sixth, seventh or eighth exemplary embodiment, or any other exemplary embodiment that determines a midpoint between two previously defined, and in particular between two correlation function value points, is implemented in the interpolation circuit 270, the midpoint determining circuit 278 can be used to determine the midpoints.

Please replace the paragraph beginning at page 60, line 26 – page 61, line 2 with the following rewritten paragraph:

In addition, although the foregoing systems and methods according to this invention have been described primarily with reference to optical image sensing devices, any other known or later-developed type of sensor array can be used with the systems and methods according to this invention. Thus, for example, capacitive sensing arrays, such as those known to provide fingerprint images, and inductive sensing arrays, such as those known to provide robust bar-code images, also can provide first and second ~~"images"~~ “images” useable with the systems and methods according to this invention.